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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Improvements in or relating to Filters

We, PRECISION MECANIQUE LABINAL, a French Body Corporate, of 17 rue de Clichy, Saint-Ouen (Seine) France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to filters for fluids, i.e. liquids (e.g. Diesel and petrol engine fuels, lubricating oils) or gases (e.g. gas circuits which may or may not be contaminated by radioactive particles in nuclear reactors, supply or ventilation circuits), and more particularly to filters of the replaceable type, i.e., filters which can be readily and rapidly screwed into their operative position and be thrown away and replaced after a specific period of use.

The object of the invention is to simplify the construction of such filters.

According to this invention we provide a filter for fluid comprising a baseplate of plastics material having a central aperture and an aperture remote from the central aperture, means for releasably securing the baseplate to a receiving means, a filter cartridge fixed to the baseplate, a transverse sleeve extending through the cartridge and communicating with the said central aperture, the said sleeve having a series of openings in its wall, a top plate of plastics material fixed to the opposite end of the filter cartridge, and an outer jacket of plastics material spaced apart from and covering the cartridge, the jacket being fixed to the baseplate. The cartridge may be fixed to the baseplate by means of a layer of an appropriate cast and polymerised plastics material.

By way of example, preferred forms of this invention will now be described with reference to the accompanying drawing, wherein:

Figure 1 is a section of a filter illustrating the invention;

Figures 2 and 3 are similar view of parts of other filters illustrating the invention.

[Price 4s. 6d.]

It may be mentioned that the component parts of, for instance, replaceable filters for liquid should be made of inexpensive materials and that the components should be so arranged internally as to ensure sealing-tightness of the filter cartridge in the jacket under conditions such as to give a low cost price. Metal elements or elements of thin sheet-metal have often been used and the resultant units proved to be relatively expensive.

To obviate or minimise these disadvantages, the invention makes use of a simple and reliable construction based on plastics materials.

According to the embodiment shown in Figure 1, the baseplate 1 is made of a plastics material which is resistant to the filtered product, for example a thermoplastic material (e.g. "Delrin", "Nylon", "Rilsan", etc.), the baseplate 1 advantageously being dish-shaped and having a central externally screw-threaded bush 2 so that it can be screwed into a frame 3 adapted to receive the filter, through which frame fluid to be filtered enters for example at 4 and returns at 5 after filtration. "Delrin" and "Rilsan" are Trade Marks.

The baseplate 1 is formed with apertures 6 for the passage of fluid to be filtered to the filter cartridge 7,

Gaskets, 8 9, are provided, these being pressed against the frame 3 when the baseplate 1 is screwed thereto.

An adhesive 10, for example a cast plastics material or a glue (a polyester, for example) is used to connect the cartridge 7 to the baseplate 1 and after the corresponding end of the cartridge 7 has been positioned is polymerised either without heating or at an appropriate elevated temperature.

Means may be provided for centring and positioning the layer of adhesive 10 under the action of the shrinkage that the material generally has after polymerisation, such means being, for example, a groove 11 provided on the central part 2 of the plate.

At the end opposite the baseplate 1 means

are provided for fixing the cartridge and isolating it from jacket 16, such means, being a top plate 12 also made of plastics material.

The top plate 12 may, for example, be made of the same plastics material as the material used for the layer 10.

After the cartridge has been fixed by layer 10, this is inverted in a mould containing a liquid layer of adhesive adapted to form the top plate 12 after polymerisation.

A distributor or collector system may advantageously be provided inside the cartridge and could be made either by continuation of threaded bush 2, i.e. by a tube 13 formed with longitudinal slots 14, or by a perforate tube 15 (Figure 3) connected to the central bush 2.

The elements 13 or 15 may be integral with the top plate 12.

When the essential components of the filter have been made in this way the system is covered with jacket 16 which will be secured to the outer part 17 of the baseplate 1 by any appropriate means.

The jacket is advantageously secured to the element 1, 17 by heat-sealing, more particularly by the heat evolved by rotation of the jacket.

In the drawing the base of the jacket 16 terminates in a moulding 18 penetrating into a groove 19 in the part 1, 17. On rotation of the jacket the friction between elements 18 and 19 produces heat which ensures a welded connection provided that appropriate pressure is applied simultaneously.

Figure 2 shows a supplementary arrangement wherein a rubber gasket 12, is incorporated in the groove 11 to take the shrinkage of the part 10 during polymerisation and thus obviate any fracture.

Any of the above embodiments results in a filter whose operation will be clear from the foregoing and which has numerous advantages over the prior art filters, more particularly, it comprises a minimum of parts, its assembly is facilitated and it is therefore inexpensive.

WHAT WE CLAIM IS:—

1. A filter for fluid comprising a baseplate of plastics material having a central aperture and an aperture remote from the central aperture, means for releasably securing the baseplate to a receiving means, a filter cartridge fixed to the base plate, a transverse sleeve extending through the cartridge and communicating with the said central aperture, the said sleeve having a series of openings in its wall, a top plate of plastics material fixed to the opposite end of the filter cartridge, and an outer jacket of plastics material spaced apart from and covering the cartridge, the jacket being fixed to the baseplate.

2. A filter according to Claim 1, wherein the cartridge is fixed to the baseplate by means of a layer of an appropriate cast and polymerised plastics material.

3. A filter according to Claim 2, wherein the said layer of plastics material is embedded in the said transverse sleeve.

4. A filter according to any preceding claim, wherein the means for releasably securing the baseplate to the receiving means comprises a screw-threaded sleeve portion extending from a central portion of the baseplate.

5. A filter according to Claim 4, wherein the screw-threaded sleeve portion constitutes an extension of the said transverse sleeve.

6. A filter according to any preceding claim, wherein the outer jacket is fixed to the bottom plate by heat sealing.

7. A filter for fluid substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.

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Fig. 1

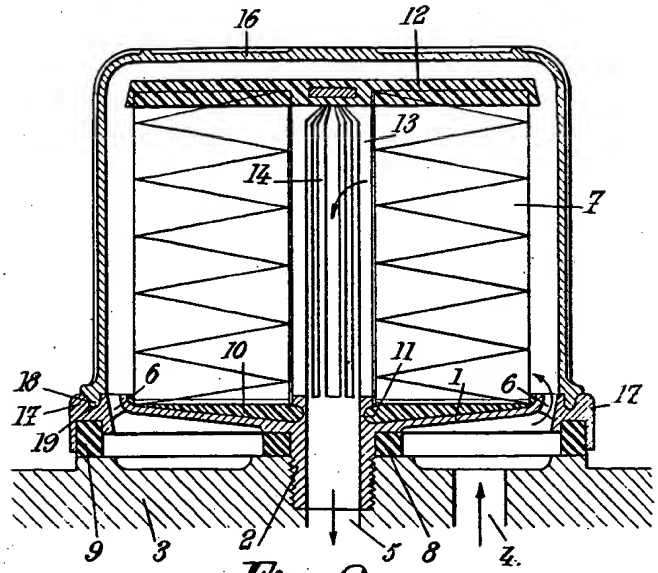

Fig. 2.

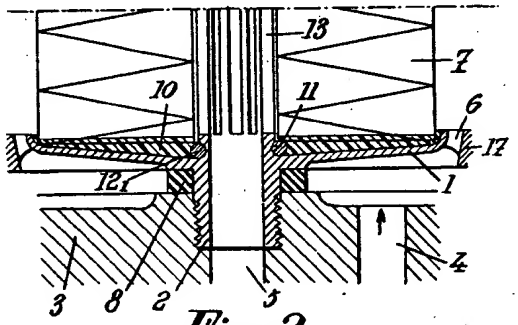

Fig. 3